A clear advantage: in Saxony-Anhalt, intelligent technologies are being developed for water preparation

Smart materials for the construction of water filters

Clean water for everyone. Two innovative companies from Saxony-Anhalt have dedicated themselves to this aim: Carbonit Filtertechnik GmbH from the Dambeck district of Salzwedel and Nanostone Water GmbH from Halberstadt are focusing on intelligent materials to ensure the best drinking water quality for consumers and industry. Each of the companies is taking its very own approach to this objective, however.

Charcoal, the all-rounder – in the beginning there was the coconut

Although coconuts do not grow on the company grounds in Dambeck, the success of Carbonit Filtertechnik GmbH, which has been based in the north of Saxony-Anhalt for more than 20 years, is actually based on the coconut. Because the drinking water filters that are manufactured here are based on renewable raw materials. “The basic material for our charcoal filters is actually coconut shell”, explains Holger Bubke, the company’s Technical Director. “The shells are burnt in the absence of air, the resulting charcoal is mixed with a special binder from medical technology and then baked under pressure. This process is called sintering.”

Charcoal is a material that can bind chemical compounds and molecules, due to its porous structure and the extremely large internal surface. “The intelligence of the material consists in being able to remove harmful substances from the water, although dissolved substances that our bodies need – such as minerals, salts and trace elements – remain”, says Holger Bubke.

The now deceased company founder Sturmi Westerbarkey laid the foundations for the company in 1997, at a former LPG area, when he acquired the international patent rights for the manufacturing of sintered charcoal block filters. The company is now headed by his sons Dr. Peter and Jan Westerbarkey, and the workforce has since grown from three to 24 employees.

Market leader for filter technology in Germany

Although the patent protection has since expired, Carbonit Filtertechnik GmbH is on a sound footing: according to its own statements, the company is one of the market leaders for filter technology in Germany and Europe. “Internationally, sales of carbonite systems are growing in medical technology, the pharmaceutical and beverage industry, mobile water supply on ships, trains, aeroplanes and camper vans, and not least of all in private households, and recently also in automobile manufacture”, says Dr. Peter Westerbarkey, outlining the areas of application. “Expert reports from renowned institutes prove the thorough and chemical-free removal of undesirable substances by our filters.”

For fresh water from the tap

Heavy metals such as copper and lead, but also chlorine, medicine residues, pesticides and microorganisms, lime and rust particles and many other substances that are not wanted in drinking water are retained in the filter, the cartridges of which are exchanged at certain intervals. Although Germany has a strict drinking water ordinance, more and more households are using these additional filters. “Many people attach importance to having the purest possible drinking water. Not all undesirable substances are filtered out in purification plants and waterworks; incidentally, only a fraction of the substances possibly contained in the water are tested for at all. The water ages on its way to the point of withdrawal through stagnation and transport into the supply networks”, explains Holger Bubke.

Nanostone Water – water treatment on an industrial scale

Whereas Carbonit, from the Altmark, primarily manufactures drinking water filters for home use and distributes these via trade partners, Nanostone Water GmbH in Halberstadt is concerned with large-scale technology for industry. Because conventional water treatments come up against their limits with very small particles, such as residues of medicines or chemicals, there is a need for nanotechnology here. The company’s own research and development department in the Halberstadt business park is working on membranes into which nanoparticles are incorporated. “The pores of our ceramic filters are so small that they reliably hold back not only solid materials, but even viruses and bacteria”, says chemist Christian Göbbert, who is part of the company’s leading trio together with Bernhard Bischof and Burghard von Westerholt. “We get out everything that is not chemically bound in the water.”

Drinking water nano-filters on their way around the world

After a development and piloting phase lasting several years, the nano-coated ceramic filters became ready for the market last year. “We see our markets as being above all in China and North America”, explains Bernhard Bischof. “In the USA, for example, clean drinking water is not to be taken for granted. In many places there are ramshackle pipes and it is normal to chlorinate the water to kill the germs.” The Chinese market is attractive, he says, because it is very fast-moving. “The Asian customers are interested in tomorrow’s technologies, we sense a great openness there.”

As an internationally oriented company, at which engineers from the American parent company are sometimes guests, Nanostone Water GmbH operates on the markets of this world. This makes the company attractive to well trained new blood – even though the closest large city is almost an hour away by car. “In our experience, employees look in particular for whether there is a dynamic climate in the company. We score with young specialist staff, because we are not a big, unmanageable tanker, but instead a young, fresh company with the atmosphere and innovativeness of a start-up”, says Bernhard Bischof, who is not without pride when reporting of the company’s development. When he started in Halberstadt in 2012, the 17 employees could almost become lost in the factory hall, now Nanostone Water GmbH employs 140 people.

While his colleagues in this round-the-clock enterprise operate the big kilns, and also the extrusion and coating plants, the Research and Development Department is already working on the next generation of products. Bernhard Bischof refers to the two billion people in the world who, according to a UN study, have no access to clean drinking water. “We know that our technology is not a universal panacea, but it is our most important contribution to the solution of such problems.”

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